WHAT IS CLAIMED IS:

1. Method of estimating an electrical capacitance of a circuit component comprising:

- a first rectangular conducting plate, having a width W, a length L and a thickness t_{M1};
- a second conducting plate, parallel to the first plate and separated from the latter by a distance t_{ox}, having a rectangular central part facing the first plate and a peripheral part surrounding said central part;
- a first homogeneous dielectric, of relative dielectric permittivity ε_{ox}, placed between the first and second plates and having a thickness of t_{ox} between the two plates and of t_{oxSt} in line with said peripheral part of the second plate, so that said first dielectric has a height step t_{ox} - t_{oxSt} around the perimeter of the first plate; and
- a second homogeneous dielectric, of relative dielectric permittivity ε_E, surrounding the first plate and the first dielectric,

the method comprising the estimation of the capacitance of the component as a sum of several terms including at least two terms of the form $C_0.W.L$ and $C_1.2(W+L)$, with

$$C_0 = \frac{\varepsilon_0 \cdot \varepsilon_{ox}}{t_{ox}} \text{ and } C_1 = \frac{\varepsilon_0}{\pi} \cdot K \cdot Ln(a),$$

- ε_0 being the dielectric permittivity of free space,
- $K = \dfrac{\varepsilon_{Ox} \cdot \varepsilon_E}{\varepsilon_{Ox} - \left(\dfrac{(\varepsilon_E - \varepsilon_{Ox})^2}{(\varepsilon_E + \varepsilon_{Ox})} \cdot \dfrac{t_{OxSt}}{t_{Ox}} \right)}$,
- $a = -1 + 2k^2 + 2k\sqrt{k^2 - 1}$ with $k = 1 + \dfrac{t_{M1}}{t_{Ox}}$.

2. Method according to Claim 1, wherein the terms of the sum furthermore include two terms of the form $[C_2(W)+C_3(W)]\cdot 2L$ and $[C_2(L)+C_3(L)]\cdot 2W$, with, for x = W or L :

$$C_2(x) = \frac{\varepsilon_0}{\pi} \cdot K \cdot \mathrm{Ln}\left(\frac{u(x)}{a}\right) \text{ and}$$

$$C_3(x) = \frac{\varepsilon_0 \cdot \varepsilon_{Ox}}{\pi} \cdot \left[2 - \mathrm{Ln}4 - \mathrm{Ln}(1 - 2\exp(-2\theta(x)))\right],$$

- the quantity u(x) being an estimate of a solution of the equation

$$\frac{\pi}{2}\frac{x}{t_{Ox}} = -\frac{a+1}{\sqrt{a}} \ln\left(\frac{R(x)+1}{R(x)-1}\right) + \frac{a-1}{\sqrt{a}} \frac{R(x)}{(R(x)^2 - 1)} + \ln\left(\frac{R(x)\sqrt{a}+1}{R(x)\sqrt{a}-1}\right)$$

with $R(x) = \sqrt{\dfrac{u(x)-1}{u(x)-a}}$, and

- $\theta(x) = 1+\pi \dfrac{x}{2t_{Ox}}$.

3. Method according to Claim 2, wherein the quantity u(x) is obtained using an iterative method of obtaining an approximate solution of an equation.

4. Method according to Claim 3, wherein said iterative method is Newton's method.

5. Method according to Claim 1, wherein said circuit component is a capacitor, and wherein the first and second conducting plates each comprise one plate of said capacitor.

6. Method according to Claim 1, wherein the first and second conducting plates each comprise a portion of electrical signal transmission tracks.

7. Method according to Claim 1, wherein the second conducting plate comprises a conducting substrate carrying the first and second dielectrics and the first conducting plate.

8. Method of numerically simulating the electrical operation of a circuit, the simulation method using at least one capacitance of a circuit component estimated according to Claim 1.

9. Method of determining a dimension of a capacitor of electrical capacitance C_u comprising :

- a first rectangular conducting plate, having a width W, a length L and a thickness t_{M1};
- a second conducting plate, parallel to the first plate and separated from the latter by a distance t_{Ox}, having a rectangular central part facing the first plate and a peripheral part surrounding said central part;
- a first homogeneous dielectric, of relative dielectric permittivity ε_{Ox}, placed between the first and second plates and having a thickness of t_{ox} between the two plates and of t_{OxSt} in line with said peripheral part of the second plate, so that said first dielectric has a height step $t_{Ox} - t_{OxSt}$ around the perimeter of the first plate; and
- a second homogeneous dielectric, of relative dielectric permittivity ε_E, surrounding the first plate and the first dielectric,

the method comprising the calculation of a first approximate value L_1 of the length L as a sum of first terms including C_u and at least one term of the form $-2 \cdot C_1 \cdot W$ divided by a sum of second terms including at least two terms of the form $C_0.W$ and $2.C_1$, with

$C_0 = \frac{\varepsilon_0 \cdot \varepsilon_{Ox}}{t_{Ox}}$ and $C_1 = \frac{\varepsilon_0}{\pi}.K.\ln(a)$,

- ε_0 being the dielectric permittivity of free space,
- $K = \frac{\varepsilon_{Ox} \cdot \varepsilon_E}{\varepsilon_{Ox} - \left(\frac{(\varepsilon_E - \varepsilon_{Ox})^2}{(\varepsilon_E + \varepsilon_{Ox})} \cdot \frac{t_{OxSt}}{t_{Ox}}\right)}$,
- $a = -1 + 2k^2 + 2k\sqrt{k^2 - 1}$ with $k = 1 + \frac{t_{M1}}{t_{Ox}}$.

10. Method according to Claim 9, wherein said first terms furthermore include two terms of the form $-2 \cdot C_2(L_0).W$ and $-2.C_3(L_0).W$, L_0 being a defined initial value and wherein said second terms furthermore include two terms of the form $2.C_2(W)$ and $2.C_3(W)$, with for $x = W$ or L_0 : $C_2(x) = \frac{\varepsilon_0}{\pi} \cdot K \cdot \ln(\frac{u(x)}{a})$, and

$C_3(x) = \frac{\varepsilon_0 \cdot \varepsilon_{Ox}}{\pi} \cdot [2 - Ln4 - Ln(1 - 2\exp(-2\theta(x)))]$,

- The quantity $u(x)$ being an estimate of a solution of the equation :

$$\frac{\pi}{2}\frac{x}{t_{Ox}} = -\frac{a+1}{\sqrt{a}}\ln\left(\frac{R(x)+1}{R(x)-1}\right) + \frac{a-1}{\sqrt{a}}\frac{R(x)}{(R(x)^2-1)} + \ln\left(\frac{R(x)\sqrt{a}+1}{R(x)\sqrt{a}-1}\right)$$

with $R(x) = \sqrt{\frac{u(x)-1}{u(x)-a}}$, and

- $\theta(x) = 1+\pi\frac{x}{2t_{Ox}}$.

11. Method according to Claim 10, wherein the quantity u(x) is obtained using an iterative method of an approximate solution of an equation.

12. Method according to Claim 11, wherein said iterative method is Newton's method.

13. Method according to Claim 10, which furthermore includes the calculation of the quantities $C_2(L_1)$ and $C_3(L_1)$, and comprises the calculation of a second approximate value L_2 of the length L as a sum of third terms divided by a sum of fourth terms, said third terms comprising C_u, $-2.C_1.W$, $-2 \cdot C_2(L_1) \cdot W$ and $-2.C_3(L_1).W$, said fourth terms comprising $C_0.W$, $2.C_1$, $2.C_2(W)$ and $2.C_3(W)$.

14. Method according to Claim 10, wherein the initial value L_0 is equal to the width W.

15. Computer program comprising instructions for applying a method according to Claim 1, when the program is run in a computer.

16. Computer program comprising instructions for applying a method according to Claim 9, when the program is run in a computer.